

GIANT MAGNETORESISTIVE CELL MONITORING

ABSTRACT OF THE DISCLOSURE

A fuel cell monitoring system for monitoring the voltage output of the fuel cells in a fuel cell stack. The monitoring system includes a wheatstone bridge having at least one giant magnetoresistive thin film device. The system further includes a switching network that selectively couples each cell to a conductive trace so that the current generated by the cell flows through the trace. The trace runs proximate to the wheatstone bridge so that the magnetic field generated by the current flow causes the magnetoresistive device to decrease its resistance, and thus, unbalance the wheatstone bridge.

The unbalanced bridge provides a voltage potential that is detected and amplified by a differencing amplifier. The output of the amplifier is representative of the voltage output of the fuel cell.